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10 CFR 50.4
10 CFR 52.79

January 16, 2014

UN#14-003

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Response to Request for Additional Information for the
Calvert Cliffs Nuclear Power Plant, Unit 3,
RAI 409, Radiation Protection Design Features

Reference: Surinder Arora (NRC) to Paul Infanger (UniStar Nuclear Energy), "CCNPP3 -
FINAL RAI 409 RPAC 7293" email dated December 20, 2013

The purpose of this letter is to respond to the request for additional information (RAI) identified in the NRC e-mail correspondence to UniStar Nuclear Energy (UNE), dated December 20, 2013 (Reference). This RAI addresses Radiation Protection Design Features, as discussed in Section 12.3 of the Final Safety Analysis Report (FSAR), as submitted in Part 2 of the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA), Revision 9.

Enclosure 1 provides our response to RAI 409, Question 12.03-13, and includes revised COLA content. A Licensing Basis Document Change Request has been initiated to incorporate these changes into a future revision of the COLA.

Enclosure 2 provides a table of changes to the CCNPP Unit 3 COLA associated with RAI 409, Question 12.03-13.

Our response does not include any new regulatory commitments. This letter and its enclosures do not contain any sensitive or proprietary information.

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NRD

If there are any questions regarding this transmittal, please contact me at (410) 369-1987 or Mr. Mark Finley at (410) 369-1907.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on January 16, 2014



Paul Infanger

- Enclosures:
- 1) Response to NRC Request for Additional Information RAI 409, Question 12.03-13, Radiation Protection Design Features, Calvert Cliffs Nuclear Power Plant, Unit 3
 - 2) Table of Changes to CCNPP Unit 3 COLA Associated with the Response to RAI 409, Question 12.03-13, Calvert Cliffs Nuclear Power Plant, Unit 3

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
Tomeka Terry, NRC Environmental Project Manager, U.S. EPR COL Application
George Wunder, NRC Project Manager, U.S. EPR DC Application, (w/o enclosures)
Patricia Holahan, Acting Deputy Regional Administrator, NRC Region II, (w/o enclosures)
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2
David Lew, Deputy Regional Administrator, NRC Region I (w/o enclosures)

Enclosure 1

**Response to NRC Request for Additional Information
RAI 409, Question 12.03-13, Radiation Protection Design Features,
Calvert Cliffs Nuclear Power Plant, Unit 3**

RAI No. 409

12.03-13

This is a follow up to RAI 391, Question 12.03-12.04-11:

10 CFR 20.1301 requires that the total effective dose equivalent to individual members of the public from the licensed operation does not exceed 0.1 rem in a year. In addition, 10 CFR 20.1101(b) requires that the dose to members of the public be as low as is reasonably achievable (ALARA). Also, 10 CFR 19.12(a) requires that all individuals who in the course of employment are likely to receive in a year an occupational dose in excess of 100 mrem be instructed in radiation protection and kept informed of the storage, transfer, or use of radioactive material and 10 CFR 19.12(b) requires that in determining those individuals subject to the requirements of 10 CFR 19.12(a), licensees must take into consideration assigned activities during normal and abnormal situations involving exposure to radiation and that the extent of the instructions must be commensurate with potential radiological health protection problems present in the work place.

The response to RAI 391, Question 12.03-12.04-11, the Calvert Cliffs Unit 3 FSAR, and the service level agreement between Calvert Cliffs Units 1 and 2 and Calvert Cliffs 3 indicate that Calvert Cliffs Units 1 and 2 radiation protection and ALARA program will control construction worker dose so that individual and collective construction worker dose is ALARA and so that individual construction workers do not receive doses in excess of 100 mrem per construction year, from Calvert Cliffs Units 1 and 2 radiation sources. However, none of the aforementioned documents address the cumulative dose that a construction worker could receive from all of the sources at the construction site (sources from the existing units, industrial radiography sources, or other sources that may be brought on site to support Calvert Cliffs Unit 3 construction or operation). Given that construction workers are being considered individual members of the public, the dose to individual construction workers, from all sources at the licensed site (*i.e.*, all sources within the site boundaries of Calvert Cliffs Units 1, 2, and 3, and any common areas shared between Units 1, 2, and/or 3, including, but not limited to, the ISFSI and resin storage area), must not exceed 100 mrem/year. The term "all sources" in the preceding sentence includes sources from the existing units, the activities of any industrial radiographers, and other sources brought on site to support Calvert Cliffs Unit 3 construction or operation. Therefore, 1) please provide information, and update FSAR Section 12.3.5 accordingly, to explain how the dose to construction workers will be controlled so that individual construction workers do not exceed 100 mrem/year from all sources and how the dose to construction workers, individually and collectively is maintained ALARA. In addition, 2) please provide information, and update FSAR Section 12.3.5 accordingly, to explain how the requirements of 10 CFR 19.12 will be met.

Response:

Response to Question 1

Calvert Cliffs Nuclear Power Plant, LLC, the owner of Calvert Cliffs Units 1 and 2, currently holds the license for the use of the radioactive material used on site and therefore is also responsible for the doses received from those sources regardless of the type of source. In order to delineate and enforce this responsibility, a Service Level Agreement (SLA) between Calvert Cliffs Units 1 and 2 and Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 was written to outline the roles and responsibilities of Calvert Cliffs Units 1 and 2 with respect to the

potential dose received by construction workers working on the construction of CCNPP Unit 3; a copy of this SLA was provided in the response to RAI 391, Question 12.03-12.04-11¹. The following paragraph from the Scope of Services section of the SLA specifies the responsibilities of CCNPP Unit 3:

[Calvert Cliffs 3 Nuclear Project, LLC] CC3LLC will not [be] responsible for any preoperational dose tracking, trending, or ALARA activities. Should any actions need to be taken by the CC3LLC construction organization, the CC3LLC UNS Project Manager will be notified to coordinate said actions.

The CCNPP Unit 3 Final Safety Analysis Report (FSAR) Section 12.3.5.1 has been revised to specify that Calvert Cliffs Units 1 and 2 is responsible for total dose from all sources used on site and that this includes the sources used in the construction of CCNPP Unit 3 until CCNPP Unit 3 is provided its radioactive material license.

In the Scope of Services section, the SLA states that should the trend for construction worker dose indicate a potential for greater than 50% of the 100 millirem limit listed in 10CFR20.1301 (a)(1), the CCNPP Units 1 and 2 Radiation Protection Manager will be notified and the subject will be added to a CCNPP Units 1 and 2 ALARA committee meeting for discussion and resolution, if required. This measure is taken to ensure that the dose to construction workers, individually and collectively is maintained As Low As Is Reasonably Achievable (ALARA).

Response to Question 2

10 CFR 19.12 states that all individuals likely to receive an occupational dose in excess of 100 millirem will be provided instruction regarding the hazards, responsibility, appropriate response and exposure reports they may request. The SLA states that conservative calculations indicate a maximum dose to a member of the public (i.e., construction worker) will be significantly less than the 10CFR20.1301 (a)(1) limit of 100 millirem/year. Although the regulatory limit is 100 mrem/year, the SLA measures will be taken to keep doses As Low As Reasonably Achievable ("ALARA"). However, because the workers will not exceed the 100 millirem per year requirement, they will not be provided instruction nor will they automatically receive an exposure letter.

COLA Impact

COLA Part 2 FSAR Section 12.3.5.1 has been revised as shown with the underlined black text. The underlined blue text was added in the response to RAI 391, Question 12.03-12.04-11¹.

12.3.5.1 Overall Plant Doses

The U.S. EPR FSAR includes the following COL Item in Section 12.3.5.1:

A COL applicant that references the U.S. EPR design certification will provide site-specific information on estimated annual doses to construction workers in a new unit construction area as a result of radiation from onsite radiation sources from the existing operating plant(s). This

¹ UniStar Nuclear Energy Letter UN#13-114, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 391, Radiation Protection Design Features, dated August 16, 2013

information will include bases, models, assumptions, and input parameters associated with these annual doses.

This COL Item is addressed as follows:

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Radiation Protection and ALARA Program

Due to the exposures from CCNPP Units 1 and 2 normal operations, the CCNPP Units 1 and 2 Radiation Protection and ALARA Program will be extended to include the CCNPP Unit 3 construction workers. This program meets the guidance of Regulatory Guide 8.8 (NRC, 1978) to maintain individual and collective radiation exposures ALARA. This program also meets the requirements of 10 CFR 20.1302. Calvert Cliffs Nuclear Power Plant, LLC, the owner of Calvert Cliffs Units 1 and 2, is responsible for total dose from all sources used on site; this includes the sources used in the construction of CCNPP Unit 3 until CCNPP Unit 3 is provided its radioactive material license.

The CCNPP Units 1 & 2 ALARA program for the construction workers consists of two proceduralized programs: the radiological environmental monitoring program (REMP) and the dosimetry program. The REMP will place dosimeters at strategic locations in and around the construction area and these dosimeters will be analyzed on a quarterly basis. The Dosimetry organization will place personnel dosimeters, per a surveillance plan, based on the most likely areas CCNPP Unit 3 construction workers will receive the highest potential doses, i.e., between ISFSI/Resin Storage area and the construction areas as well as other strategic areas. The Dosimetry department will perform forward-looking dose projections annually to observe for any increasing trends in dose. It is the responsibility of CCNPP Units 1 & 2 Radiation Protection Program to control doses to the construction workers to less than 0.1 mSv/year.

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Enclosure 2

**Table of Changes to CCNPP Unit 3 COLA
Associated with the Response to
RAI 409, Question 12.03-13,
Calvert Cliffs Nuclear Power Plant, Unit 3**

Table of Changes to CCNPP Unit 3 COLA
Associated with the Response to RAI No. 409

Change ID #	Subsection	Type of Change	Description of Change
Part 2 – FSAR			
CC3-09-0116	12.3.5.1	Incorporate COLA markups associated with the response to RAI 60 Question 12.03-12.04-2 ² .	The RAI 60 Question 12.03-12.04-2 response added the text under the "Radiation Protection and ALARA Program" paragraph located in COLA Section 12.3.5.1.
CC3-10-0012	12.3.5.1	Incorporate COLA markups associated with the response to RAI 199 Question 12.03-12.04-6 ³ .	The RAI 199 Question 12.03-12.04-6 response added text under the "Radiation Protection and ALARA Program" paragraph located in COLA Section 12.3.5.1.
CC3-13-0126	12.3.5.1	Incorporate COLA markups associated with the response to RAI 391 Question 12.03-12.04-11 ¹ .	The RAI 391 Question 12.03-12.04-11 response added a paragraph describing the CCNPP Units 1 and 2 ALARA program under the "Radiation Protection and ALARA Program" paragraph located in COLA Section 12.3.5.1.
CC3-14-0001	12.3.5.1	Incorporate COLA markups associated with the response to RAI 409, Question 12.03-13 (this response).	The RAI 409, Question 12.03-13 response (this response) added a new sentence to the first paragraph under the "Radiation Protection and ALARA Program" paragraph located in COLA Section 12.3.5.1.

² UniStar Nuclear Energy Letter UN#09-192, from Greg Gibson to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI No. 60, Question 12.03-12.04-2, Radiation Protection Design Features, dated April 16, 2009

³ UniStar Nuclear Energy Letter UN#10-020, from Greg Gibson to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI No. 199, Radiation Protection Design Features, dated February 24, 2010